

Synclite status

-or-

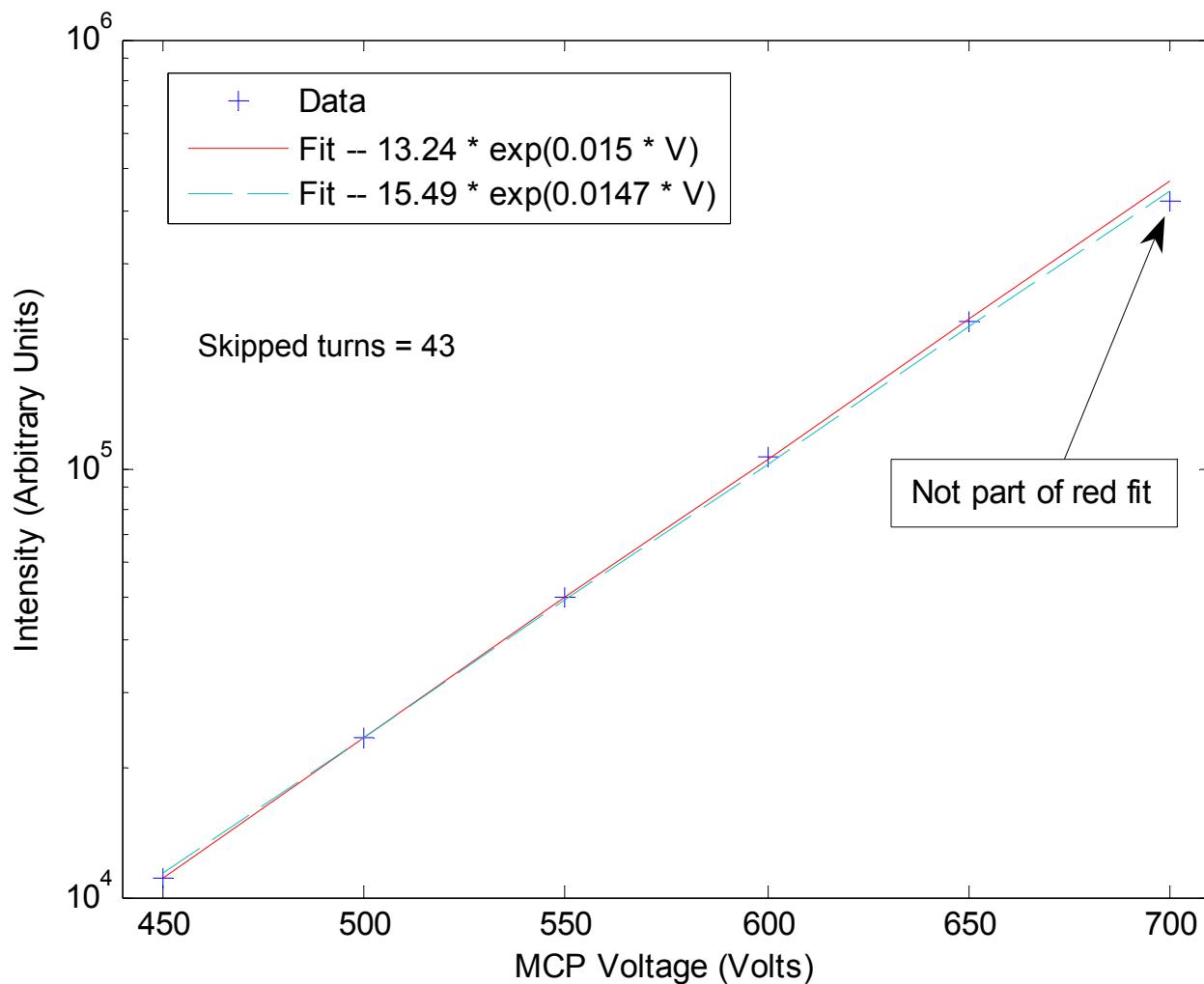
“Hey, where did all the light go?”

Instrumentation related artifacts

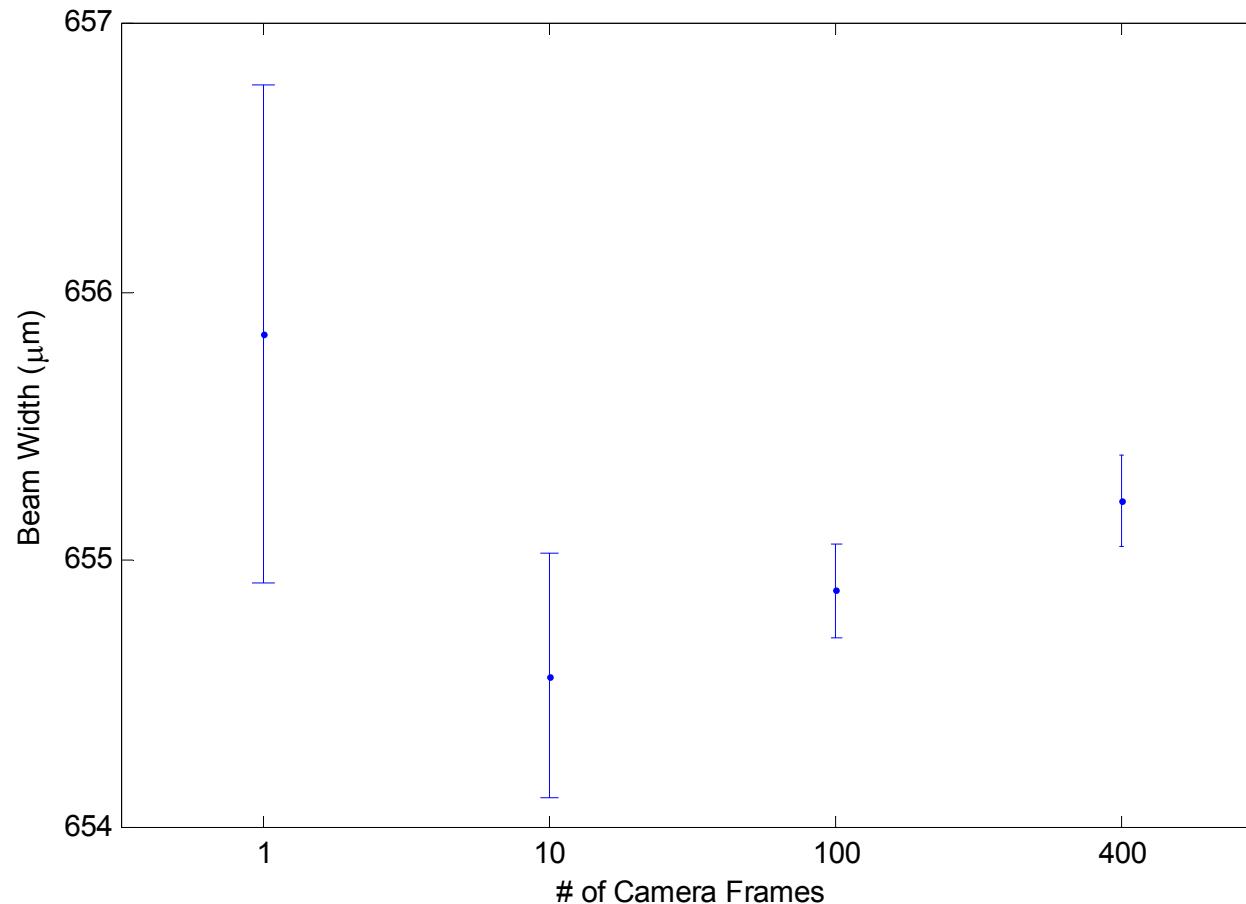
All done without filters

- # of camera frames
- MCP voltage vs. Duty cycle
- Attenuator
- Pulser voltage
- 2-D scan of intensifier/camera (check intensity and sigma)
 - Few percent variation

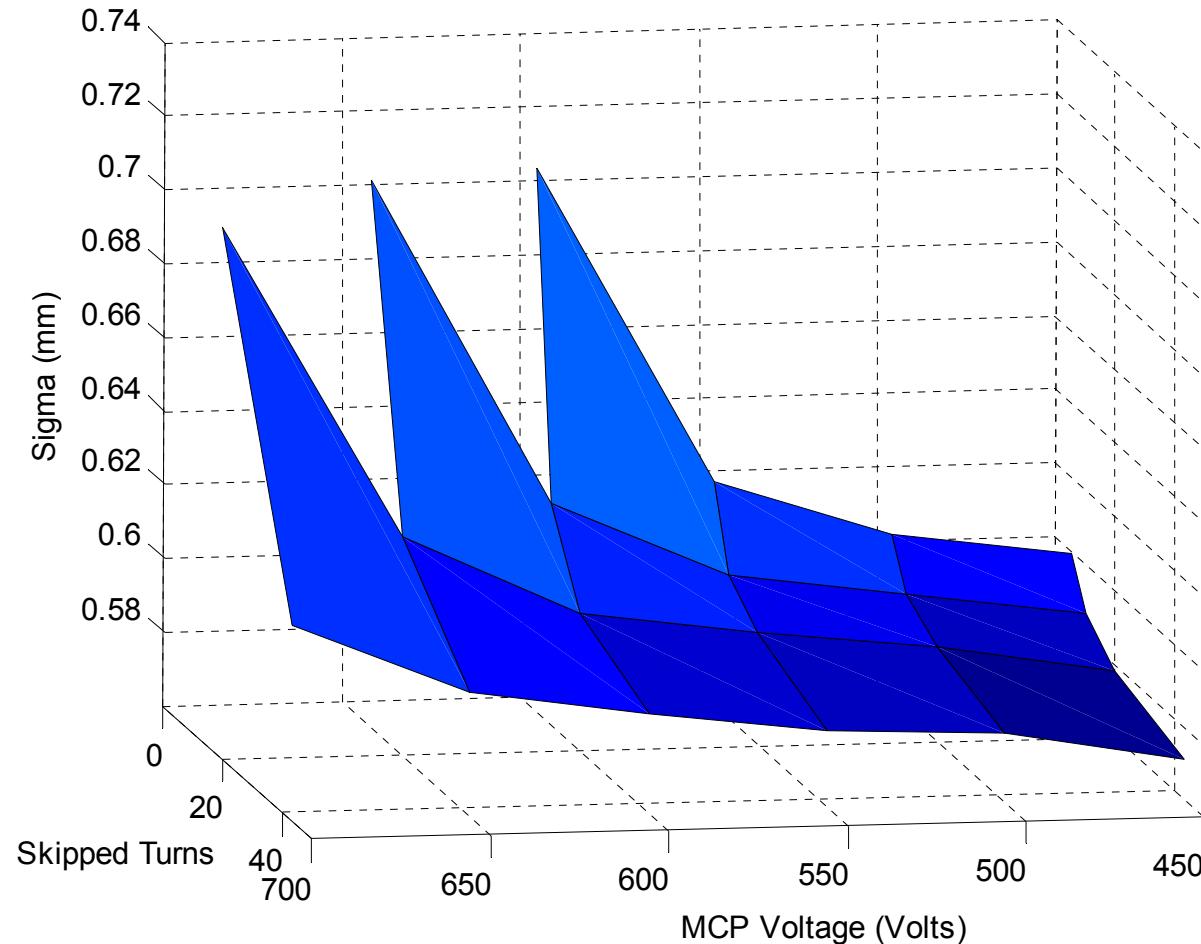
Gain vs. MCP voltage



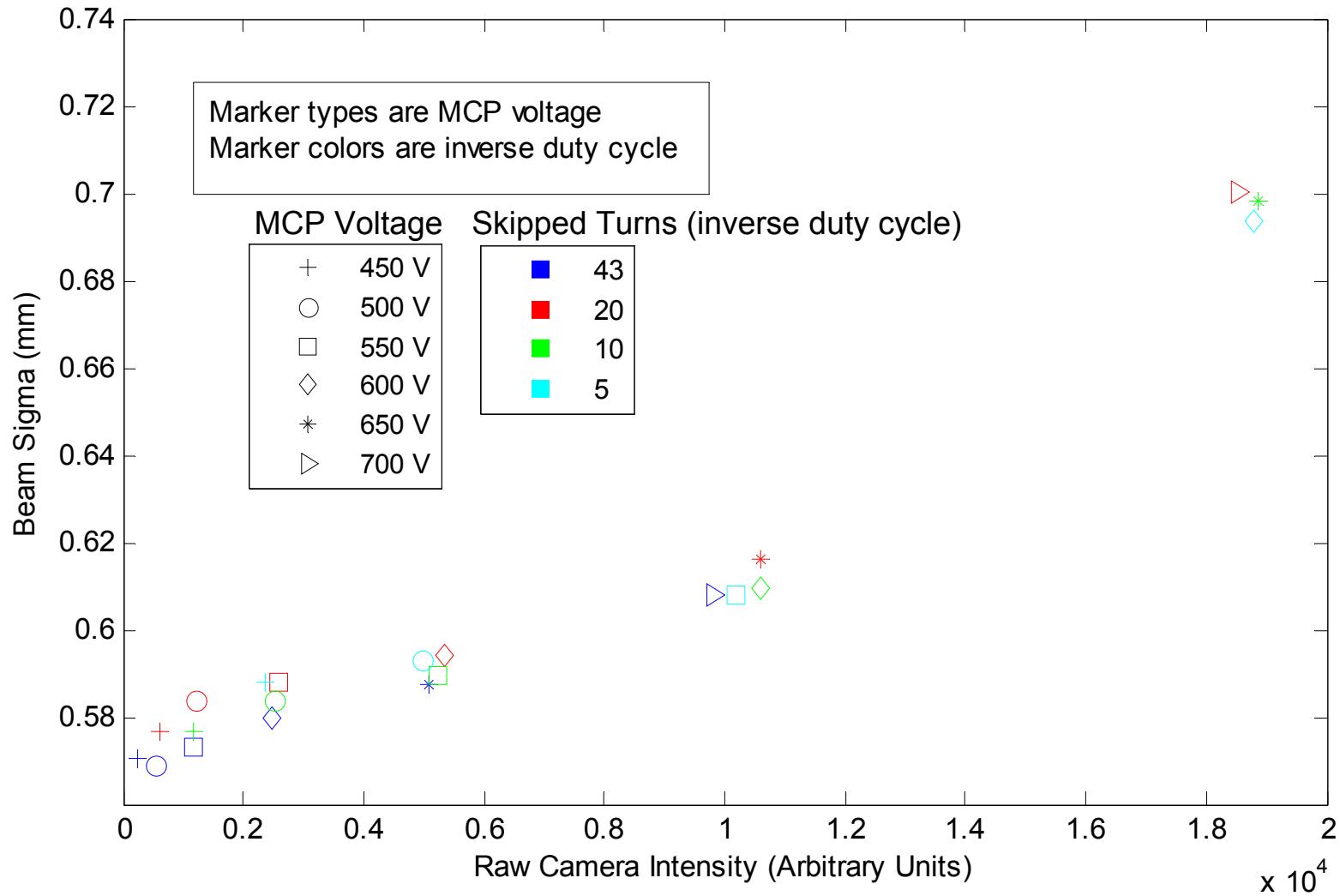
Sigma vs. number of camera frames



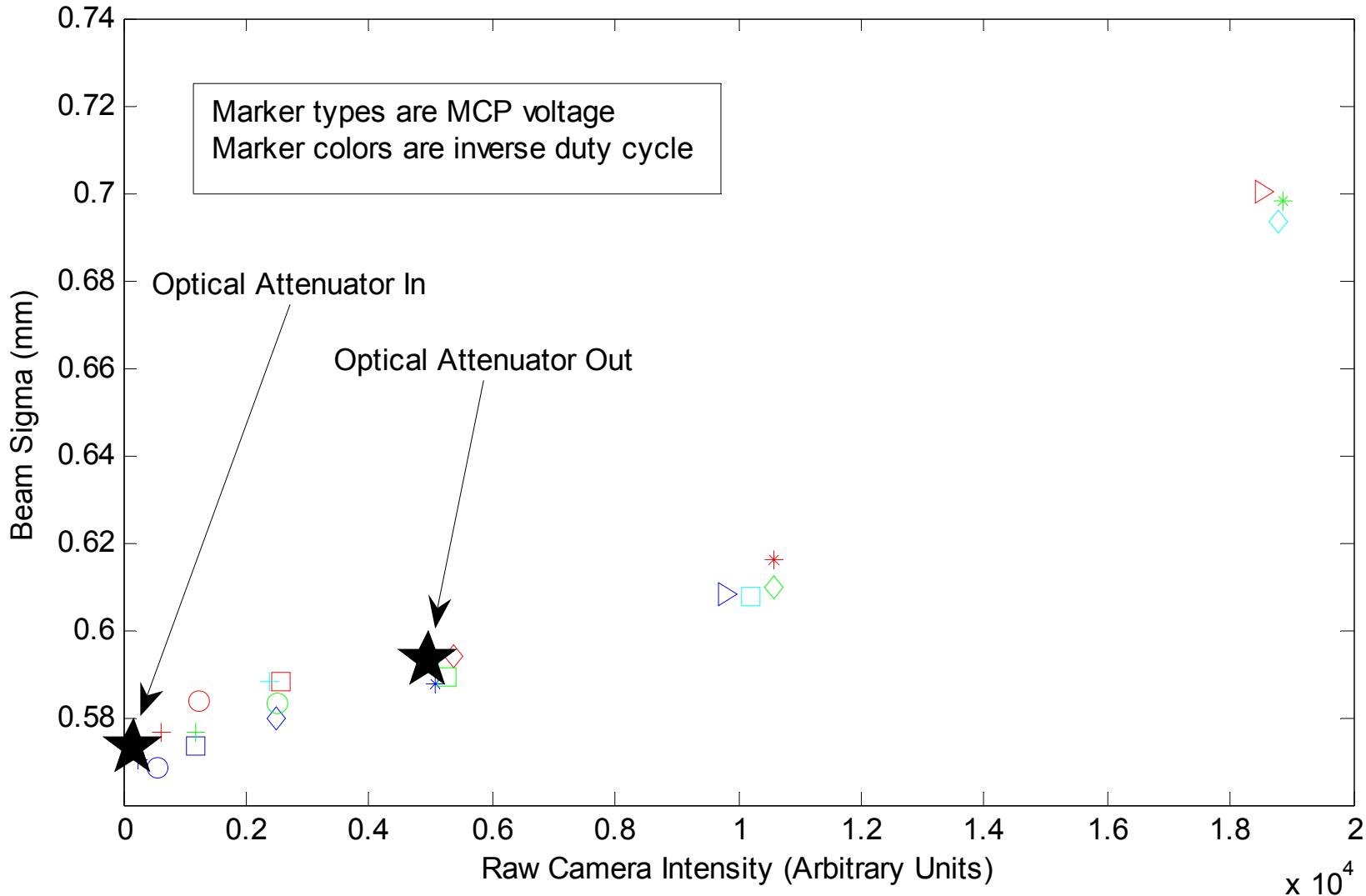
Sigma vs. (skipped turns, a.k.a. inverse duty cycle, and MCP voltage)



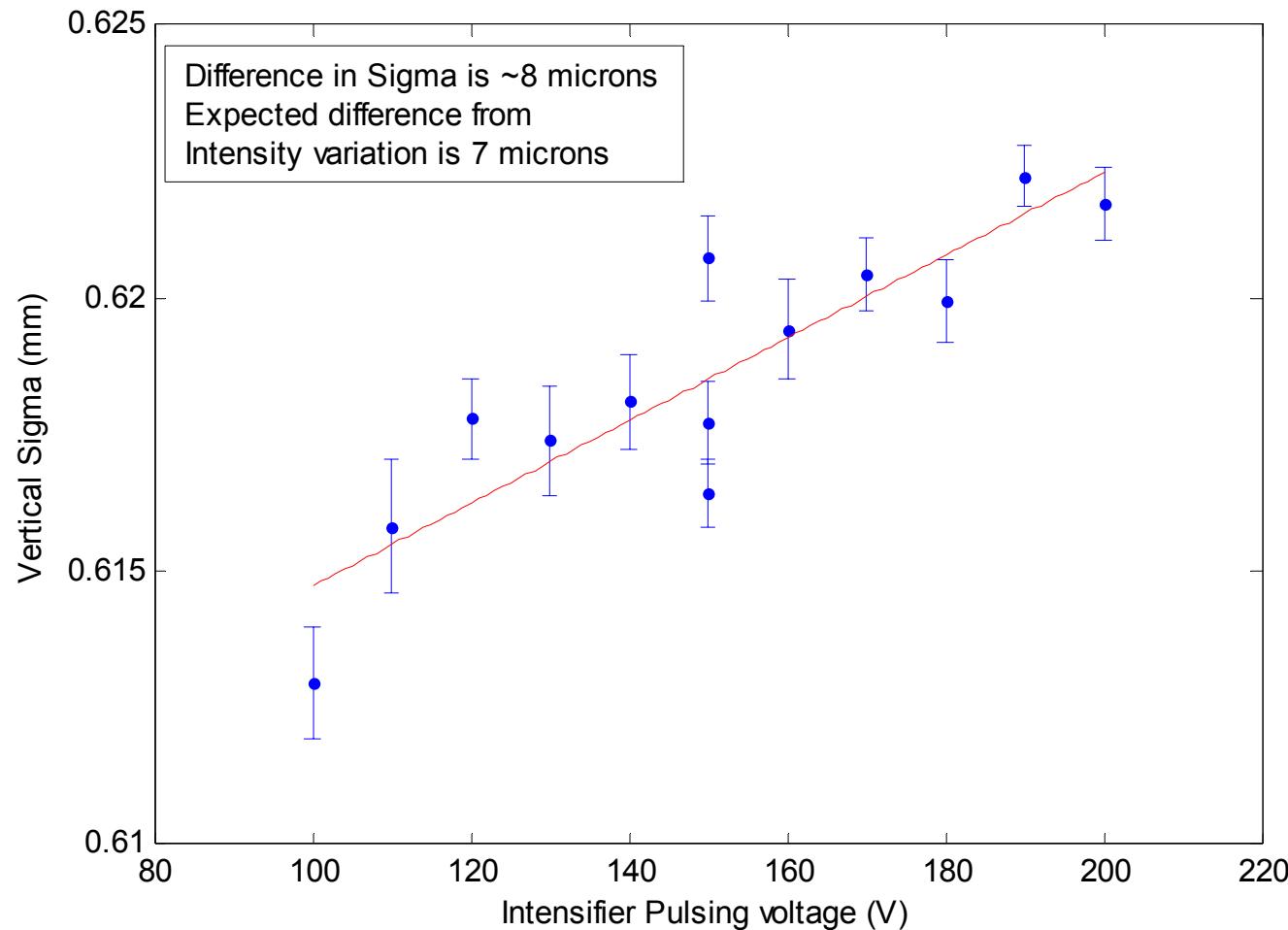
Sigma vs. (skipped turns, a.k.a. inverse duty cycle, and MCP voltage)



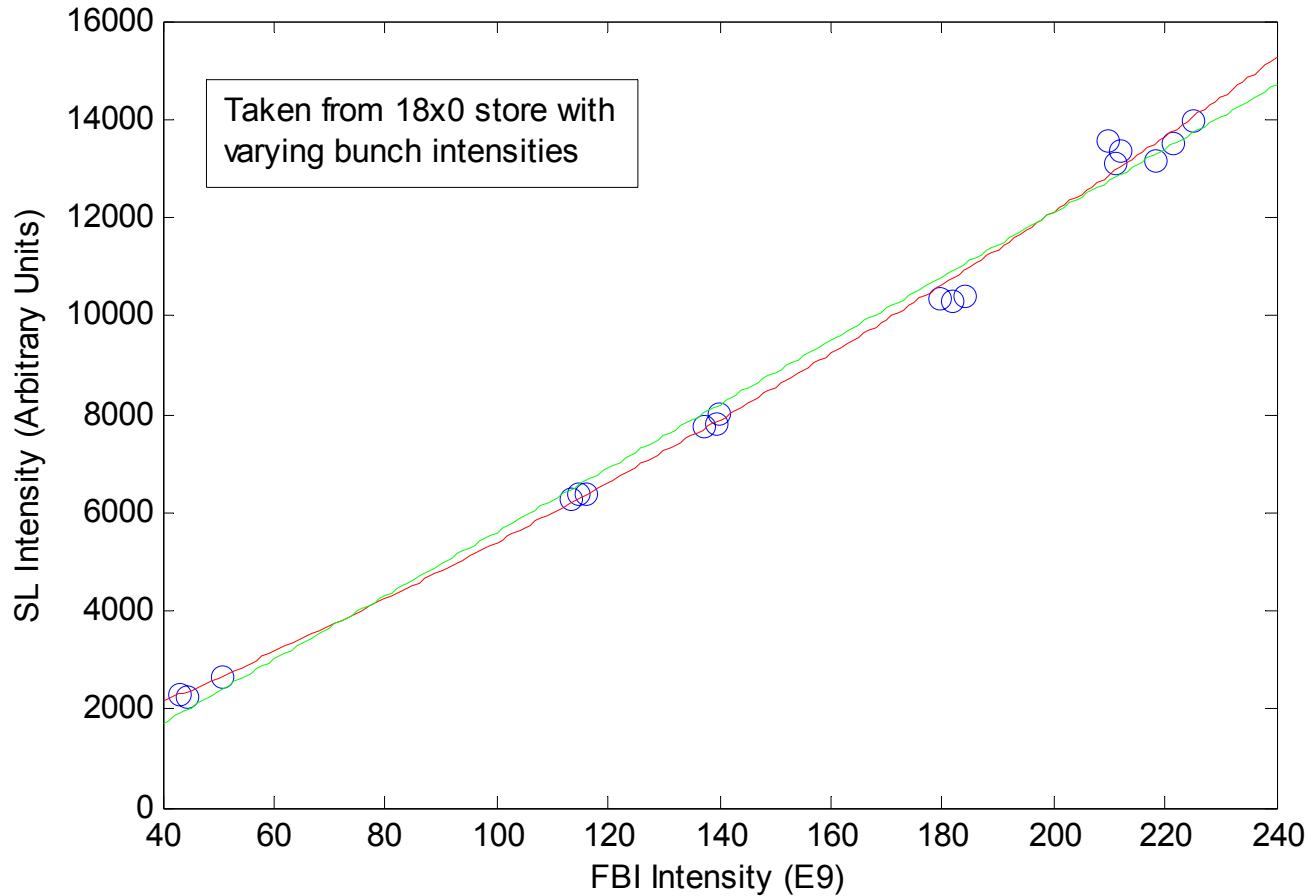
Sigma vs. input light intensity



Sigma vs. image intensifier pulsing voltage



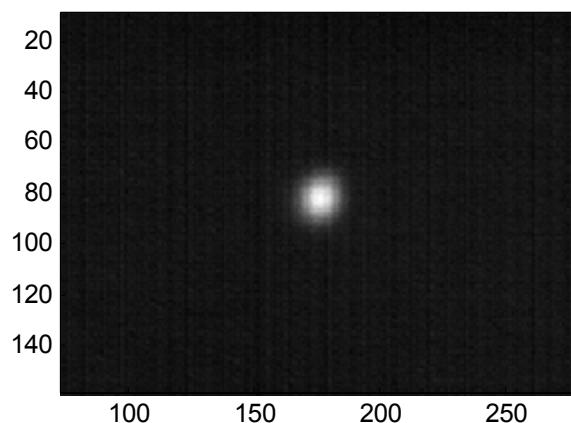
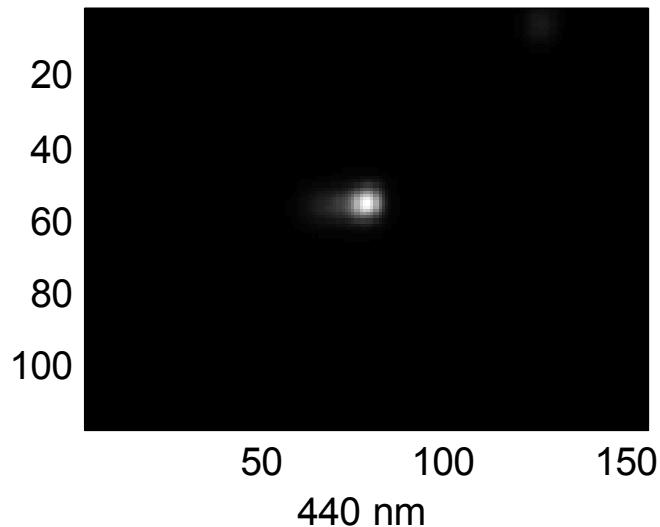
Gain linearity with photon flux



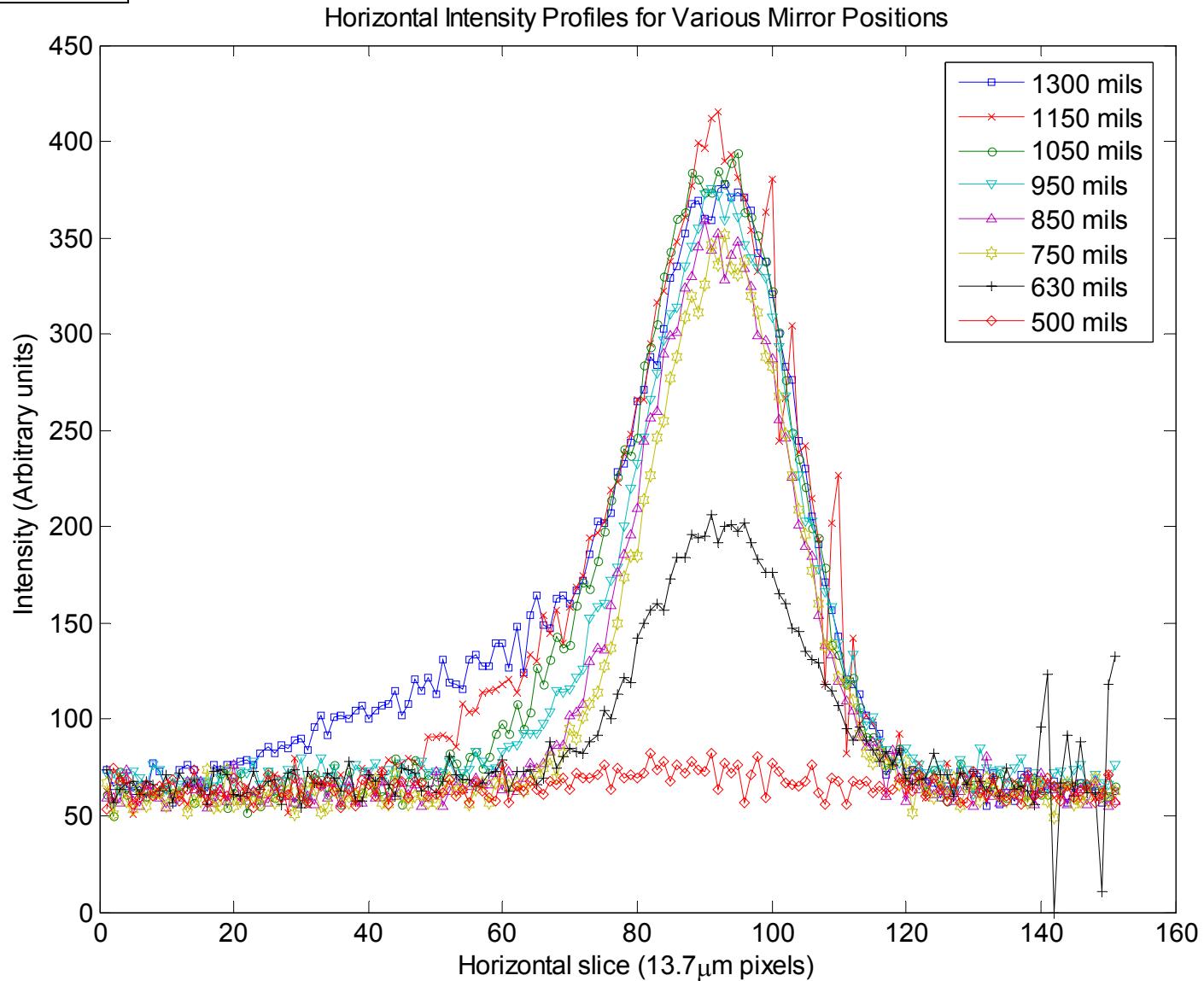
Mirror Moves

- Discovered that the proton mirror had been inadvertently moved in by half an inch over the shutdown
 - Source of the large tails seen earlier
- Moved the proton mirror back out a ways, but not quite as far out as it was. Should move it back to where it was.
- Moved the pbar mirror in to record images.

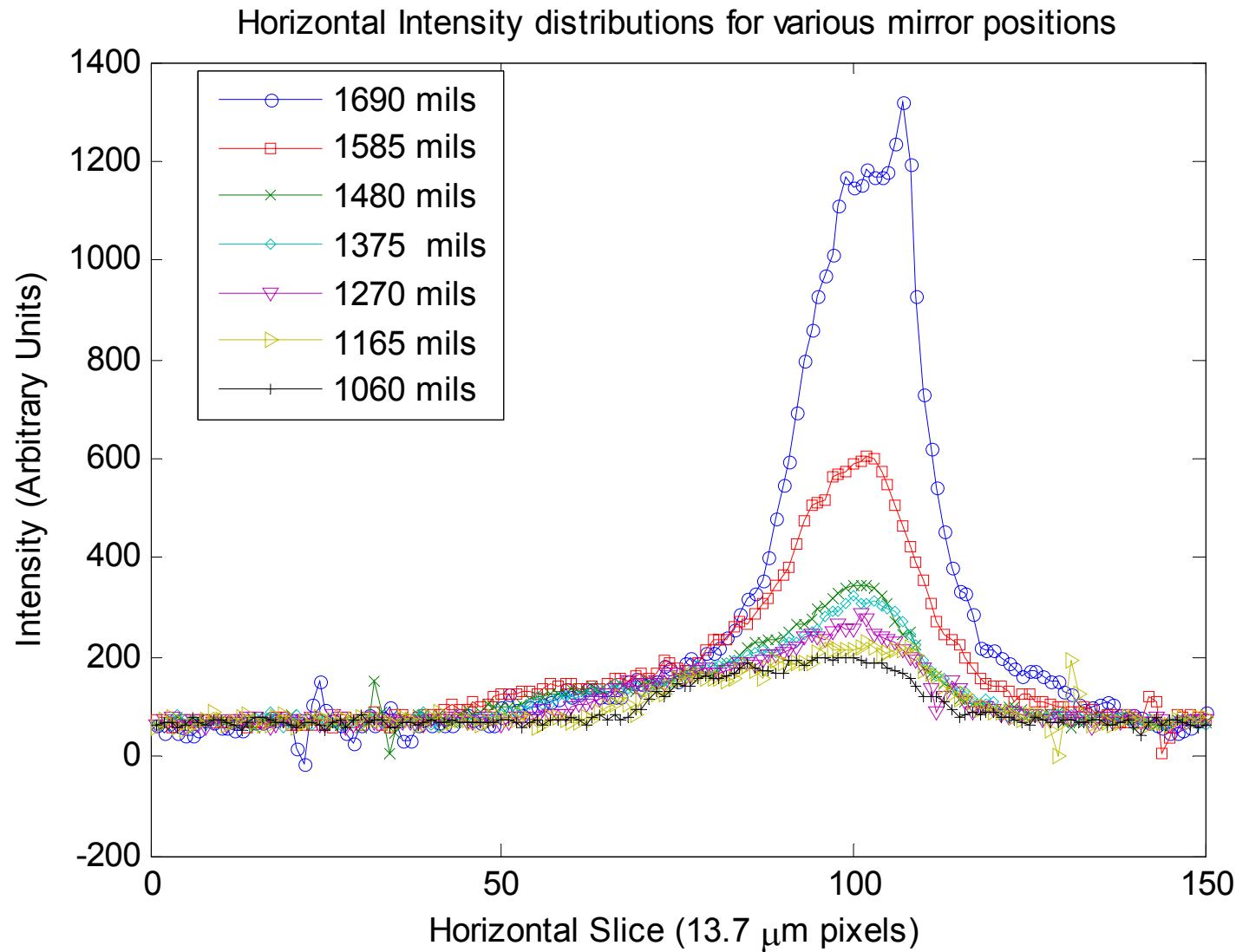
Before / after mirror move at 440 nm



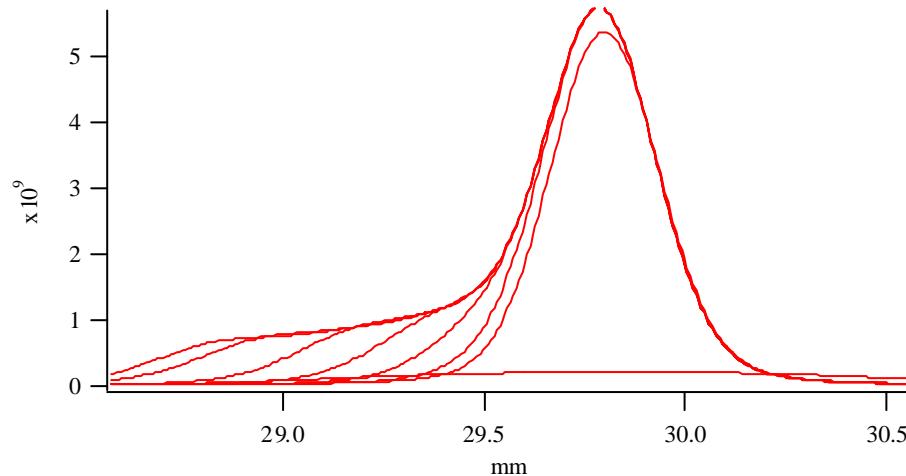
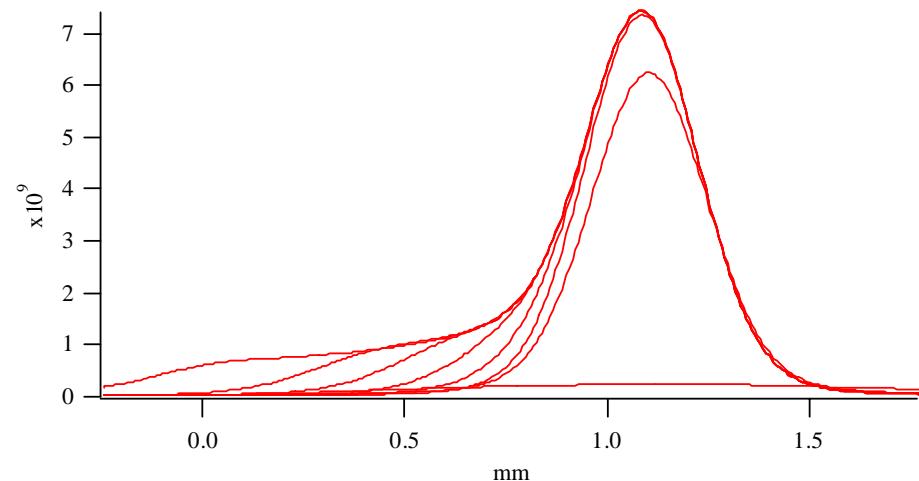
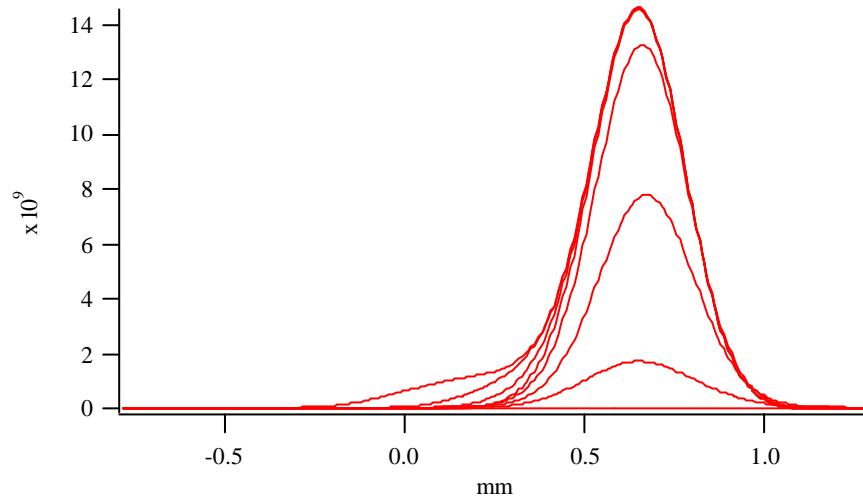
Protons



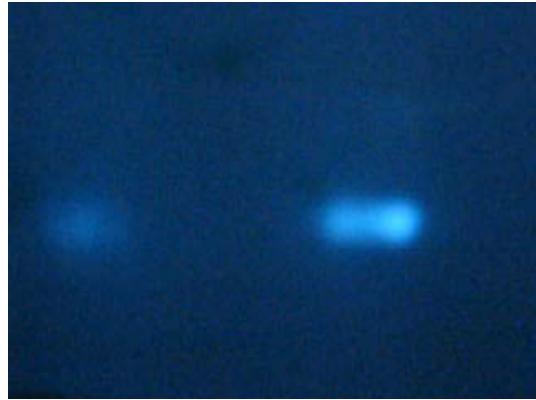
Antiprotons



Proton mirror move simulation with varying optical configurations

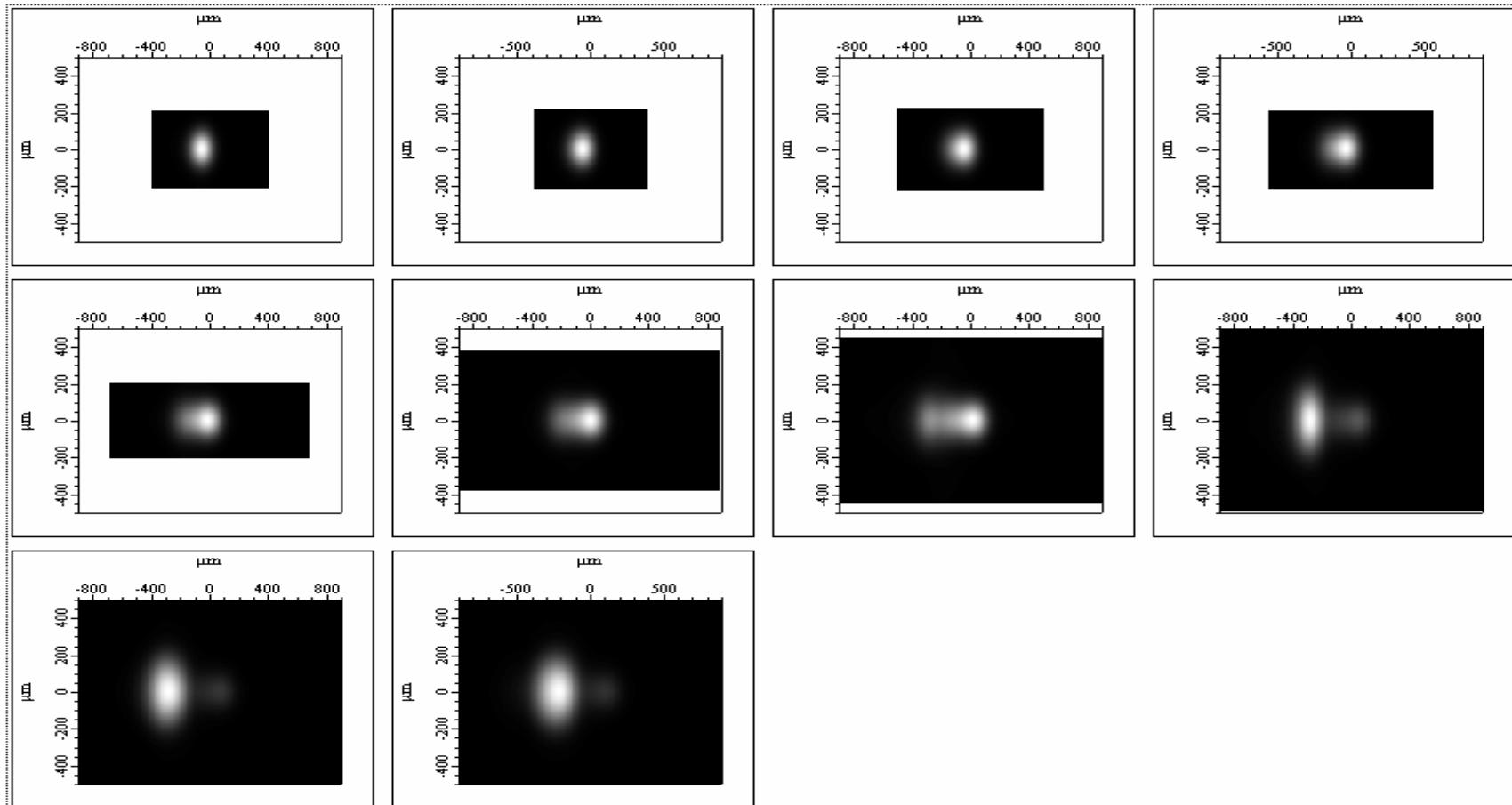


Antiproton Data

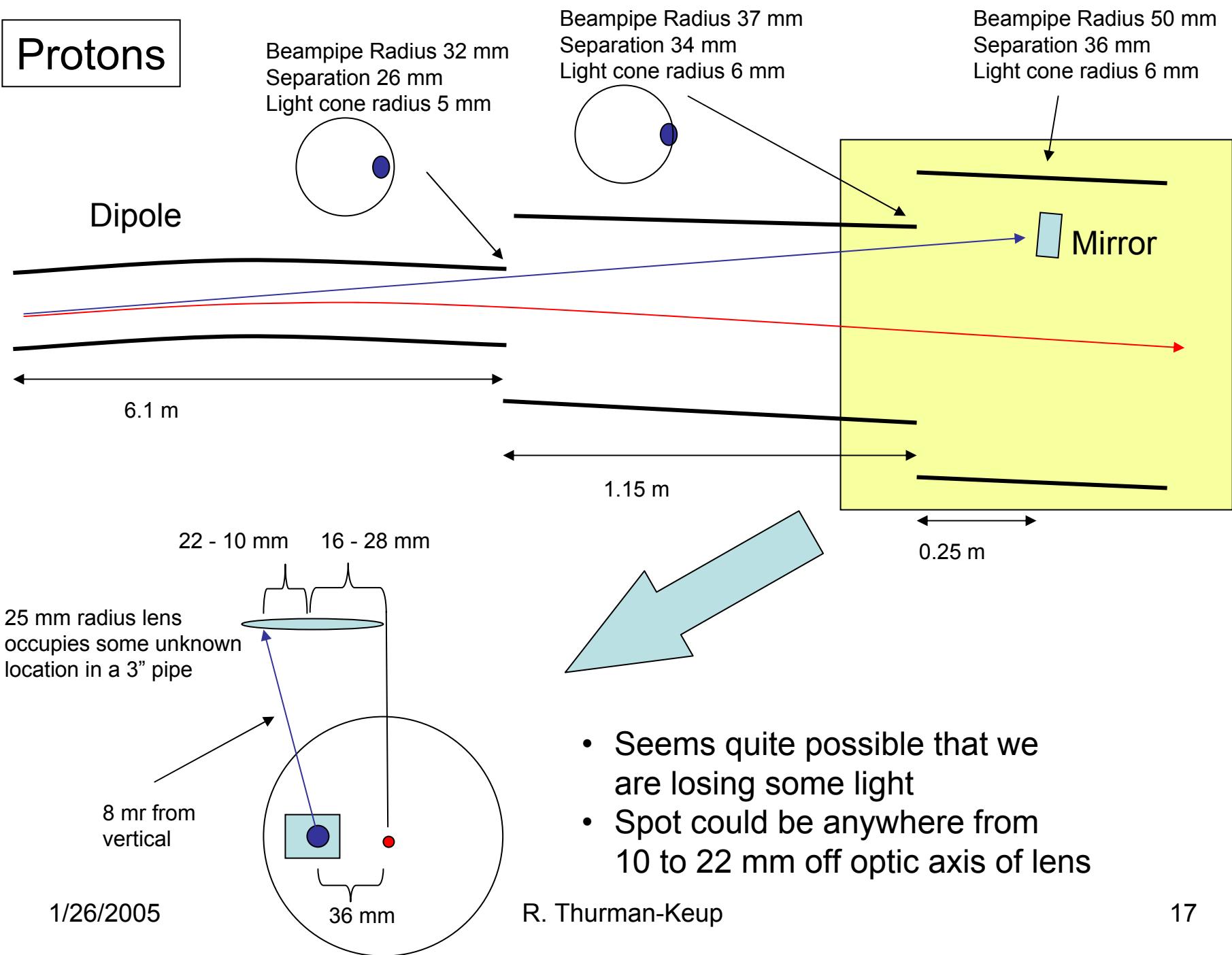


Antiproton Simulation

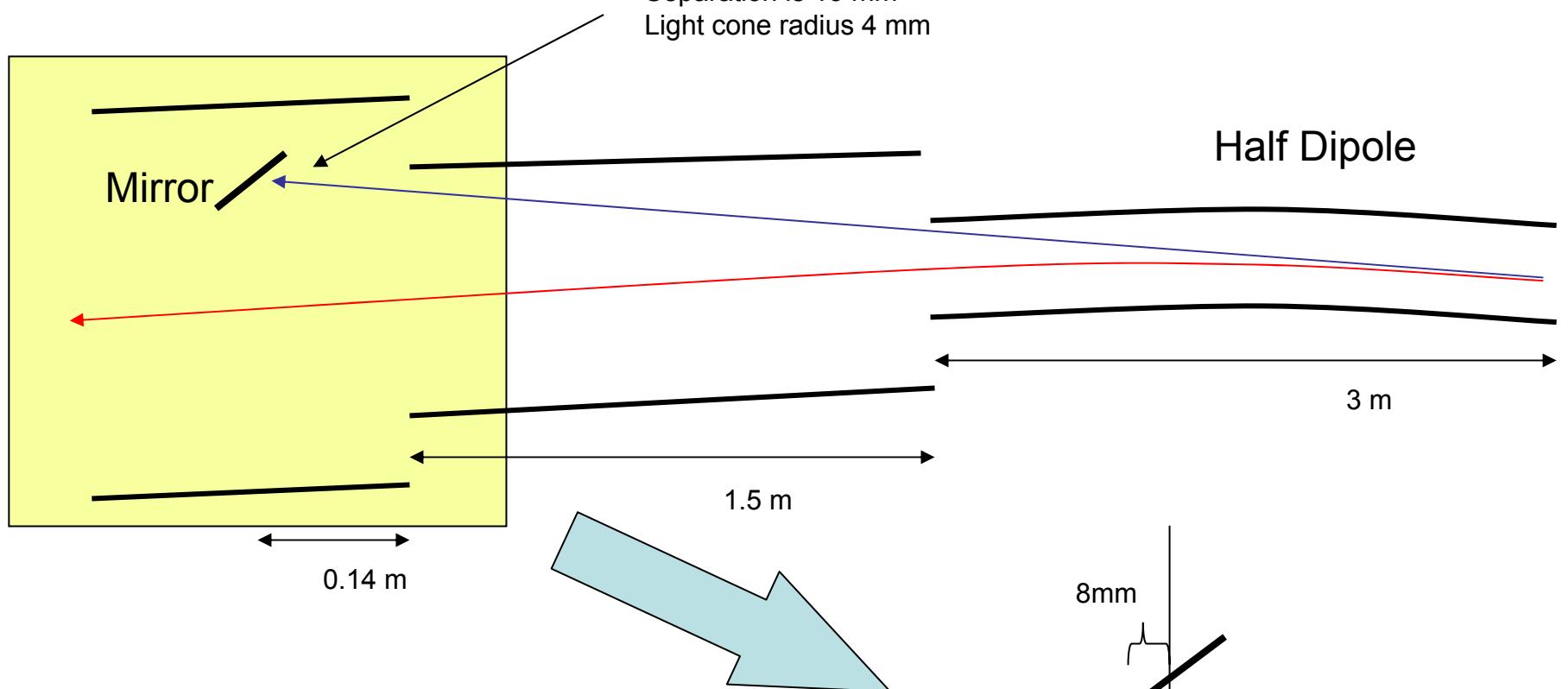
Camera focused ~1 meter into body of magnet



Protons



Antiprotons

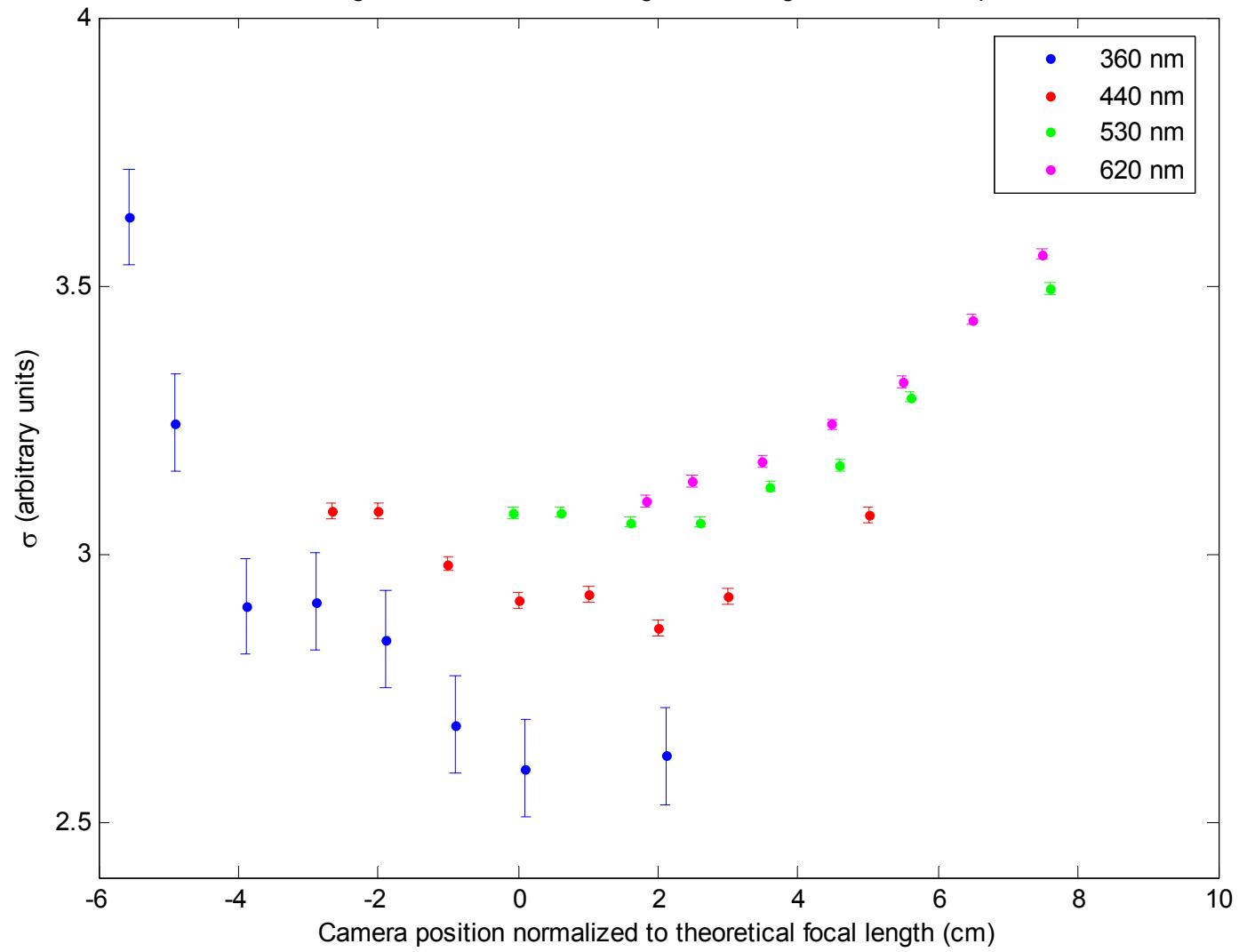


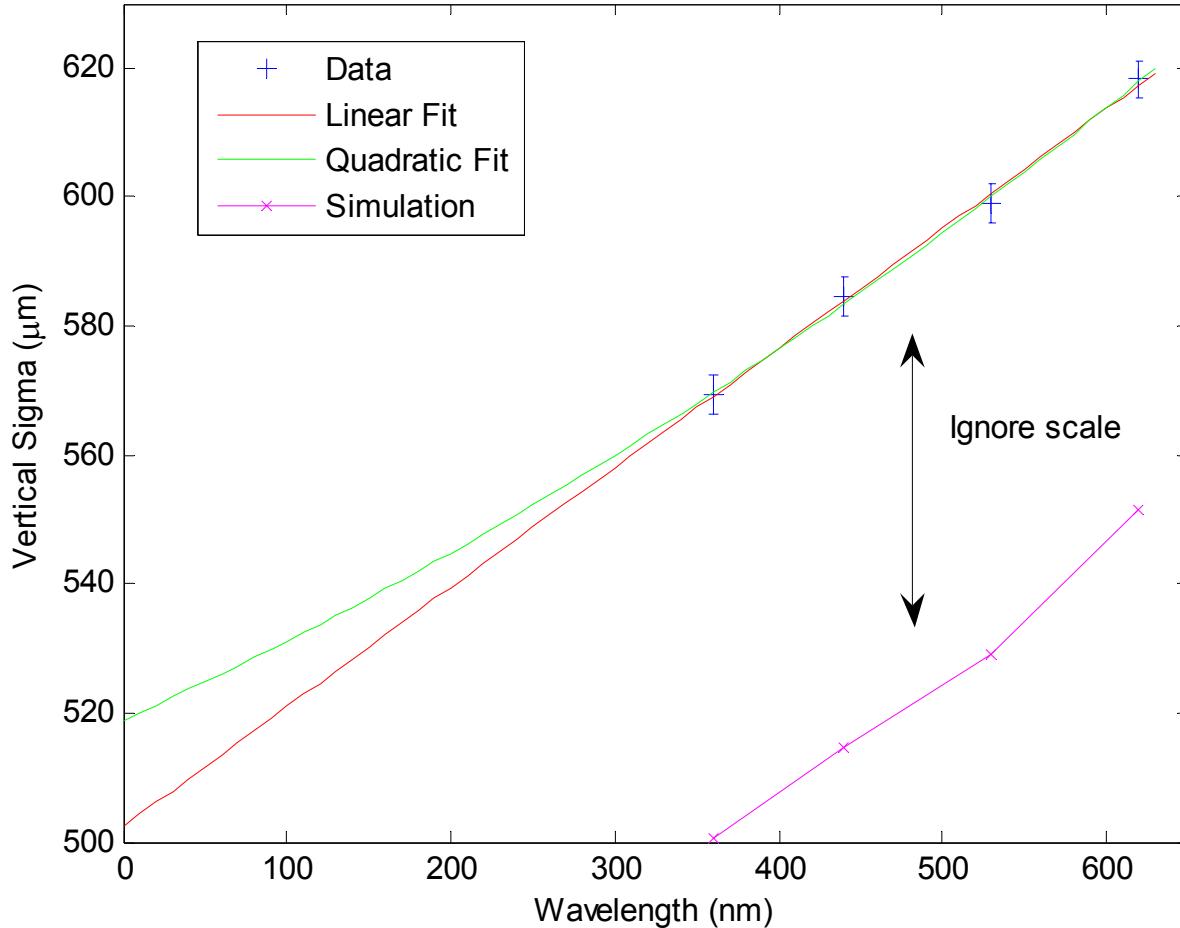
- No danger of hitting beampipe
- Spot is 7 mm off optic axis of lens

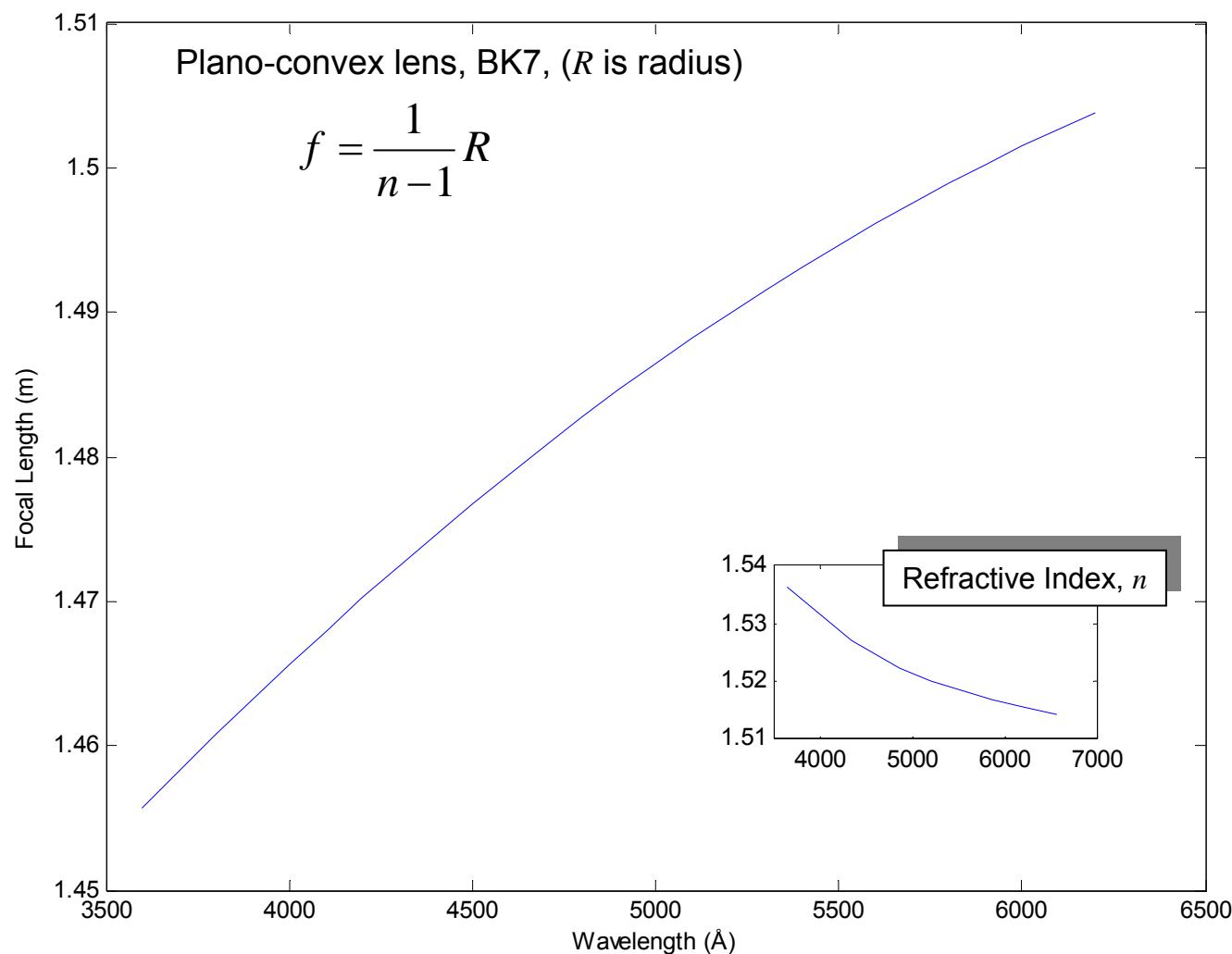
Diffraction

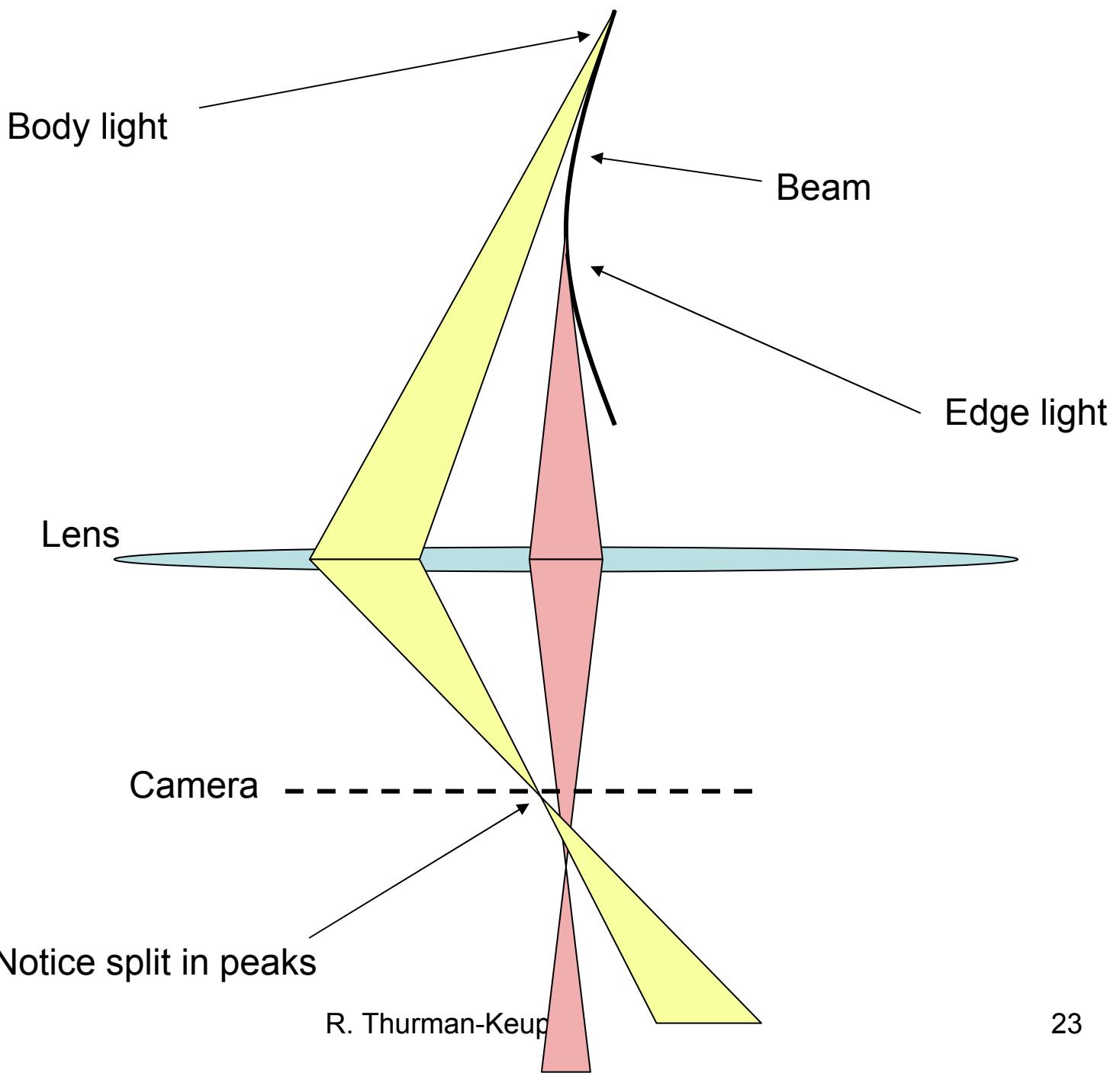
- Measure the width at different wavelengths
 - Diffraction $\sim \lambda$
 - Sigma = Sigma(beam) + Diffraction
 - $\text{Sigma} = \sqrt{\sigma^2 + \lambda^2}$
- Check that the focal point vs. wavelength makes sense

Vertical Sigmas at different wavelengths and longitudinal camera positions









Conclusions

The horse is not dead yet

- Extract diffraction contributions for p and pbar, hor. and vert.
- Check pbar shapes (probably end up being better behaved than proton)
- Missing light
 - Move the proton mirror in finer steps to determine horizontal distribution of light
 - Move the beam (off helix?)
 - Continue with simulation in attempt to understand what we see